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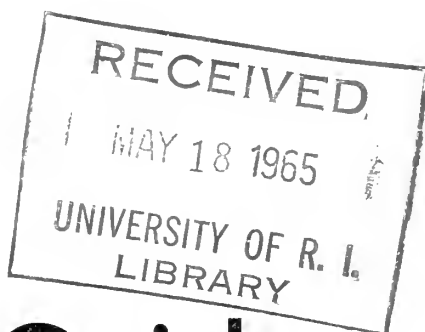
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Herbicide Guide

1965

FOR COMMERCIAL VEGETABLE GROWERS

WEED GROWTH reduces vegetable growers' income in the United States by millions of dollars annually as a result of lower yields, poorer quality, and added labor in harvesting and processing the crops.

This guide should be used together with the grower's knowledge of soil types and the crop and weed history of the area to be treated. The decision of whether to use herbicides or other means of weed control depends in part on the severity of past weed infestations. Several herbicides are suggested for most crops. These herbicides have shown good control with little or no injury to the vegetables under test conditions. Where more than one herbicide is suggested, the final decision rests with the grower and is based on his knowledge of past weed infestation and cost of material. When using an herbicide for the first time, a small scale trial is advised.

These suggestions for chemical weed control in vege-

tables are based on research at the Illinois Agricultural Experiment Station, the U.S. Department of Agriculture, and other research institutions. The University of Illinois and its agents assume no responsibility for results from the use of these herbicides, whether or not they are used in accordance with suggestions, recommendations, or directions of the manufacturer or any governmental agency.

Reading the label of the herbicide container is the most profitable time you spend in weed control. Use of the material and methods of use depend on registration of the herbicide by the Food and Drug Administration. Do not use any herbicide unless the label states that it is cleared for use on the crop to be treated.

Recommendations sometimes change during the growing season. These suggestions are printed only once each year, and are therefore subject to change without notification.

NOTE: In the recommendations table on the following pages, the common names of the herbicides are used. The list immediately below shows both trade names and their corresponding common names.

Common name	Trade name
amiben	Amiben, Vegiben
atrazine	Atrazine
CDAA	Radox
CDEC	Vegadex
CIPC	Chloro IPC
dalapon	Dowpon
DCPA	Dacthal
diphenamid	Dymid, Enide

Common name	Trade name
DNBP (dinitro)	Sinox PE, Premerge
endothal	Endothal
EPTC	Eptam
linuron	Lorox
monuron	Telvar
NPA	Alanap-3
simazine	Simazine
solan	Solan

USE THESE RECOMMENDATIONS IN 1965 ONLY

<i>Crop</i>	<i>Herbicide</i>	<i>Rate of herbicide per acre actually covered</i>	<i>Weeds controlled</i>	<i>Best time of application (based on crop stage)</i>	<i>Remarks, cautions, limitations</i>
Asparagus (seedlings)	amiben	2-3 lb.	Annuals	Immediately after seeding	Irrigation or rainfall after treatment will give maximum control.
Asparagus (established planting)	monuron	2-3 lb.	Annuals	In spring and after harvest	Apply after disking.
	simazine	2-4 lb.	Annuals	In spring and after harvest	Apply after disking. Apply only once a year after first year. Do not treat during last year in asparagus because of residue.
	dalapon	5 lb.	Perennial grass	End of harvest season following disking	Apply when grass weeds are 3 to 4 inches tall.
Beans, snap and lima	DCPA	8-10 lb.	Annuals	Immediately after seeding	May not control smartweed and common ragweed.
	DNBP	6-9 lb.	Annuals	Preemergence	May not control smartweed and annual grasses.
Beans, lima	amiben	2-3 lb.	Annuals	Immediately after seeding	Field may be rotary-hoed without destroying herbicide action.
Beans, snap	EPTC	3 lb.	Annuals and annual grasses	Before planting	Must be incorporated immediately for best control.
Beets, garden and sugar	endothal	4-7 lb.	Annuals	Preemergence	Rainfall or irrigation after treatment and before weeds emerge gives maximum control.
	TCA	8 lb.	Annual grasses	Preemergence	
Cabbage Cauliflower Broccoli	DCPA or	8-10 lb.	Annuals	Immediately after seeding or transplanting	May not control smartweed or common ragweed.
	CDEC	4-6 lb.	Annuals	Immediately after seeding or transplanting	Direct spray to base of transplants. Do not use when temperature is above 80° F. Use lower rates when temperature is below 60°.
Carrots Celery Dill Parsnips Parsley	stoddard solvent	60-80 gal.	Annuals	After two true leaves have appeared. (Do not apply to carrots or parsnips after they are ¼ inch in diameter, because an oily taste may result.)	Most effective when sprayed on cloudy days or during high humidity, and when weeds are not more than 2 inches high. May not control ragweed.
Carrots	linuron	1-2 lb.	Annuals	Preemergence	May be followed by a later treatment of stoddard solvent.
Cucumbers Muskmelons	NPA	3-6 lb.	Annuals	Immediately after seeding or transplanting	Granular form desirable on transplants. Do not use on cold soil. Rainfall or irrigation after treatment gives maximum control.
Onions	DCPA	8-10 lb.	Annuals	Immediately after planting	May not kill smartweed or common ragweed. Can be used on seeds, sets, or seedlings. CIPC or potassium cyanate can be used for smartweed or common ragweed.
	potassium cyanate	16-20 lb.	Annuals	Loop stage only	Apply in 100 gal. of water per acre. Apply when humidity is high.
	CIPC	5-6 lb.	Annuals	Preemergence or loop stage (also may be used after 3 to 4 leaf stage)	In the later sprays, direct at base of onion plant. If more than one application is applied do not exceed 6 lb. per acre for the season. Use lower rates in cool, wet weather. Use no later than 30 days before harvest.
	CDA	4-6 lb.	Annuals	Preemergence or after 3 or more true leaves	Heavy rainfall may reduce stand. Very effective on purslane and pigweed. Use no later than 45 days before harvest. Direct application to base of plant in later treatment.
	Mixture of CIPC..... 3 lb. } and CDA..... 3 lb. }		Annuals	Preemergence or 3 to 4 leaf stage	Direct spray to base of onion plant. Use no later than 45 days before harvest.
Peas	DNBP	1-2 lb.	Annuals	Preemergence or before peas are 6 inches tall	Apply in at least 20 gal. of water per acre. Use lower rate when temperature is 80°.
	MCP (amine)	¼ lb.	Annuals and Canada thistle	When peas are 3-7 inches tall	May delay maturity 1 to 4 days. Use at least 20 gal. of water per acre.

Rates per acre of herbicides suggested on these pages are based on active ingredients (actual amount of active herbicide in the material or acid equivalent). Use the lower rate on sandy soil and the higher rate on clay and loam soils.

When using a band application over the row, always adjust the amount of material applied to the part of an acre treated. Refer to University of Illinois Circular 791, "Band Spraying Pre-emergence Herbicides."

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<i>Crop</i>	<i>Herbicide</i>	<i>Rate of herbicide per acre actually covered</i>	<i>Weeds controlled</i>	<i>Best time of application (based on crop stage)</i>	<i>Remarks, cautions, limitations</i>
Peppers	diphenamid	4-6 lb.	Annuals	Preemergence or after transplanting	Do not plant another food crop on treated areas for one calendar year. Use 4 lb. on light soil.
	DCPA	8-10 lb.	Annuals	Immediately after planting	May not control smartweed or common ragweed.
	amiben	2-3 lb.	Annuals	Within 2 to 3 days after transplanting or immediately after lay-by	Apply only once during growing season. Apply when foliage is dry. Rainfall or irrigation after application will give best results. Use granular formulation only.
Potatoes, Irish	DNBP	3-5 lb.	Annuals	Very start of emergence	Early applications shortly after planting can reduce plant stand if associated with high temperature and rainfall.
	EPTC	3-5 lb.	Annuals, quackgrass, and nutgrass	At planting time	Immediate soil incorporation is necessary for best results.
	dalapon	3-4 lb.	Annual grasses and quackgrass	Just before emergence	Do not use on red-skinned varieties. Do not use if a preplant treatment was used.
		5-6 lb.	Quackgrass	Before plowing in spring; wait 4 days before plowing and planting	Not for fields intended for red-skinned varieties.
Potatoes, sweet	DCPA	8-10 lb.	Annuals	Immediately after planting	May not control smartweed or common ragweed. Preferred on sandy soils.
	amiben	3 lb.	Annuals	Immediately after planting	Preferred on loam soils.
Spinach	CIPC	1-3 lb.	Annuals	Immediately after seeding	Use 1 lb. if the temperature is below 60°.
	CDEC	3-4 lb.	Annuals	Immediately after seeding	Do not apply if temperature is above 80°. Irrigation or rainfall after treatment gives best results.
Squash Pumpkins	NPA	3-5 lb.	Annuals	Immediately after seeding or transplanting	Use granular form on transplants. Do not use early when soil is cold. Moisture is necessary for good control. Use 3-lb. rate on sandy soils.
		4 lb.	Annuals	At vining time	Apply on freshly cultivated fields. Use granular formulation only. Keep away from vines.
	DNBP	4 lb.	Annuals	Preemergence	Do not use on light sandy soils. Do not use if plants are to be covered by any type of plant protector.
	amiben	2-3 lb.	Annuals	As soon after seeding as possible	
Sweet corn	CDA	4 lb.	Annuals	Preemergence	Not effective on sandy soils.
	atrazine	2-3 lb.	Annuals, annual and perennial grasses	Preemergence	Grow corn a second year without treatment. This chemical has a high soil residue. Do not plant other vegetable crops on a sprayed area until a second year of corn has been grown. Use atrazine only where quackgrass is a problem. Residue hazard decreased when banded.
		2,4-D (amine)	½ lb.	Annuals	Postemergence
Tomatoes (direct-seeded)	diphenamid	4-6 lb.	Annuals	Preemergence	Preferably, apply before corn is 6 inches tall. If corn is over 12 inches reduce rate to ¼ lb.
Tomatoes (trans-planted)	diphenamid	4-6 lb.	Annuals	After transplanting	Do not plant other food crops on treated area for one calendar year. Use 4 lb. on light soils.
	amiben	2-4 lb.	Annuals	Within 2 to 3 days after transplanting	Use granular formulation only. Do not use on sandy soils.
				or Immediately after lay-by	Granular formulation can be used on all soils. Apply only once during growing season.
	solan	4 lb.	Annuals	Two weeks after transplanting	Do not apply within 30 days of harvest. Most effective when following amiben or diphenamid.

USE THESE RECOMMENDATIONS IN 1965 ONLY

CALIBRATION OF APPLICATION EQUIPMENT

Accurate calibration and uniform coverage are essential for desirable and economical results.

Spray Equipment

The pressure at which the spray is applied is critical and should be in the range of 20 to 60 pounds per square inch. Higher pressures, such as those frequently used in applying other pesticides, are unsatisfactory.

A rate of 40 to 60 gallons per acre would be a good range for liquid application. The amount of herbicide per acre, however, must be controlled closely by careful calibration, and while there are many ways of calibrating a sprayer, the following one has been found to be satisfactory:

1. Before beginning calibration, be sure the boom and nozzles are adjusted to give the overall or band coverage that is desired.
2. Fill the spray tank with water.
3. Spray a measured area at a set speed. If band applications are being used, be sure to calibrate only for the actual area covered with the herbicide.
4. Measure the amount of water required to refill the tank. This amount divided by the portion of an acre covered will give the gallons of spray per acre being used. For example, if 20 gallons were used to cover one-half acre in the test run, then 40 gallons per acre can be expected in the actual spraying operation.

5. Then add the suggested amount of herbicide per acre to this much water. If 4 pounds per acre are needed, this amount should be added to every 40 gallons in the above example. Note that suggestions are for active ingredient. Thus, if the material used is shown on the label to contain 50 percent active ingredient, then 8 pounds of herbicide should be added to the 40 gallons of water to obtain 4 pounds of active ingredient.

The above method is condensed from the University of Illinois Circular 837, "Calibrating and Maintaining Spray Equipment."

Granular Equipment

One way to accurately calibrate granular units is as follows: Detach the delivery tubes and place or tie cans under the spouts. Drive a measured distance, which equals some fraction of an acre, at a set speed. Make three runs at a low setting and three at a high setting. The amount of material used divided by the fraction of an acre covered will give the amount of material applied per acre at any one setting. Further settings to obtain additional rates per acre must be tried on a measured area before actual field application.

University of Illinois Circular 839, "Calibrating and Adjusting Granular Row Applicators," supplies additional details on calibration.

CLEANING OF APPLICATION EQUIPMENT

Spray Equipment

It is important to keep spraying equipment clean to avoid crop contamination or injury and to preserve the equipment. It is recommended that sprayers used for 2,4-D or like compounds *not* be used for applying insecticides, fungicides, or other postemergence herbicides on other crops. When cleaning a sprayer, thoroughly wash the tank, pump, lines, boom, and nozzles. The spray pump should be in operation to insure circulation of the cleaning solution throughout the sprayer. Water will rinse out many preemergence materials, but persistent herbicides require the use of cleaning agents. The addition of one gallon of household ammonia or 5 pounds of sal soda to 100 gallons of water will aid in removing herbicide residues from sprayers.

Copper residues from fungicides may reduce the effectiveness of certain herbicides, particularly the dinitros. To remove copper residues, add one gallon of vinegar or 5 percent acetic acid to every 100 gallons of water, and let it stand in the sprayer for *two hours only*. Drain the sprayer immediately and rinse thoroughly with water.

Granular Equipment

Granular equipment is easier to clean and maintain than spray equipment. The units should be removed and dumped, or run in an open position and cleaned with forced air. A good tire pump will do the job. Rotate the delivery mechanism to insure adequate removal of granular particles. Store in a dry place when not in use.

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